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**References to other related national  
documents** : Division applied for on 07/11/01  
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## **SPRAY DEVICE WITH LATERAL ACTIVATION, ESPECIALLY NASAL SPRAY**

Fluid product dispensing device comprising a tank (10) containing fluid product, a pump or valve (20) mounted on the tank (10) by means of a fixing ring (30) to dispense the fluid product selectively, and a dispensing head (40) comprising a dispensing opening (45), characterised in that the device comprises an activation device (50) which can be displaced in relation to the said dispensing head (40) between a resting position and a dispensing position, displacement of the said activation device (50) acting on the fixing ring (30) or an element integral with it to activate the pump or valve (20), displacement of the activation device (50) being achieved in a direction different, and notably approximately perpendicular, to the direction of spray of the product through the dispensing opening (45)

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The present invention relates to a fluid product spray device, and more particularly a fluid product spray device in which the force of activation exerted by the user is directed in a direction different from the direction of spraying of the product through the spray opening of the device.

The majority of fluid product dispensing devices, whether dispensers of perfume, drugs or cosmetics, are made in such a way that the user, when he wishes to dispense a dose of product, exerts a force either on the dispensing head or on the product tank, this force being directed axially in the direction of displacement of the piston or valve of the device. This type of activation is very practical for all devices where the direction of spraying is not axial, i.e. not parallel to the direction of displacement of the piston or of the pump or the valve of the device. However, for a nasal spray device, where the direction of dispensing of the product is axial in order to send the dose of product inside the nostril, this type of spray has a certain number of drawbacks.

Thus, in particular, the fact that the force to activate the device has to be exerted in an axial direction means that it is difficult keep the nosepiece steady in the nostril at the time of dispensing. In addition, this type of activation can require a certain force to overcome the precompression of the pump or the valve, which can pose difficulties for some people, such as the elderly or children, and in extreme cases can cause injury inside the nostril. Also, this type of device is relatively difficult for another person to activate because he or she does not feel the contact of the nosepiece inside the nostril.

The purpose of the present invention is to provide a fluid product spray device which does not reproduce the above-mentioned drawbacks.

In particular, the purpose of the present invention is to provide a fluid product spray device which is simple and cheap to make and assemble and which can be adapted

to any type of pump or valve currently available, without involving any change in the design of the pump or valve.

The purpose of the present invention is also to provide such a fluid product spray device which is simple to activate, notably in a nasal application.

The purpose of the present invention is also to provide such a fluid product spray device which makes it possible to keep the dispensing opening of the device steady in the nostril at the time of activation of the device.

Therefore the subject-matter of the present invention is a fluid product spray device comprising a tank containing fluid product, a pump or a valve, mounted on the tank by means of a fixing ring, to dispense the fluid product selectively, and a dispensing head comprising a dispensing opening, characterised in that the device comprises an activation device which can be displaced in relation to the said dispensing head between a resting position and a dispensing position, the displacement of the said device acting on the fixing ring or an element integral to it in order to activate the pump or valve, the displacement of the activation device being carried out in a different direction, and notably approximately perpendicular, to the direction of spray of the product through the dispensing opening.

Advantageously, the dispensing head forms an integral part of a body more or less surrounding the unit formed by the tank, the pump or valve and the fixing ring, the activation device being fitted on a side wall of the said body.

According to a first embodiment of the present invention, the activation device comprises a lever mounted to pivot on the said body, with part of the said lever forming a cam co-operating with the fixing ring or an element integral to it.

Advantageously, the lever is mounted to pivot on the body at the bottom of the tank.

Advantageously, the activation device comprises a precompression element such that the pump or valve is only activated when the precompression threshold is overcome by the user.

According to another embodiment of the present invention, the activation device is in the form of one or several buttons on a side wall of the said body and co-operating with the said fixing ring, the said buttons being moveable in a direction perpendicular to the direction of displacement of the rod activating the pump or valve.

According to yet another embodiment of the present invention, the said activation device is formed on the side skirt of the dispensing head and co-operates with part of the fixing ring to activate the pump or valve.

Advantageously, the fixing ring or an element integral to it comprises an oblique cam element co-operating with the lower end of the side skirt of the dispensing head, such that displacement of the said skirt in a transverse direction in relation to the direction of spray of the product is transferred by the said oblique cam element into a displacement in the direction of spray of the product.

Advantageously, the cam element is at the end of the activation stroke of the dispensing head.

According to yet another embodiment of the present invention, the said fixing ring comprises a part for fixing to the tank and a part for fixing the pump which form an angle between them of about  $90^\circ$  such that the direction of displacement of the activation rod or valve of the pump is perpendicular to the axis of symmetry of the tank, the said dispensing head also forming an angle of about  $90^\circ$  with the activation rod or valve of the pump, such that the direction of spray of the product is parallel to the axis of symmetry of the tank, the pump being activated by displacement of the dispensing head in the direction of displacement of the activation rod or valve.

Advantageously, the dispensing head is a nasal dispensing head which, during activation of the pump or valve, remains in position in the user's nostril.

Other characteristics and advantages of the present invention will appear more clearly from the following detailed description of several embodiments of the present invention, given as non-limiting examples in relation to the enclosed drawings in which :

- figure 1 is a diagrammatic view in cross-section of a device according to a first embodiment of the present invention;

- figure 2 is a similar view to that in figure 1, showing a variant of the device on this first embodiment;

- figures 3a and 3b are diagrammatic views of a device according to a second embodiment of the present invention;

- figure 4 is a diagrammatic view of a third embodiment of the present invention;

- figure 5 is a diagrammatic view of a fourth embodiment of the present invention;

- figures 6a and 6b represent diagrammatically a fifth embodiment of the present invention, respectively before and after activation;

- figure 7 shows diagrammatically a sixth embodiment of the present invention, with the two positions before and after activation shown on the same figure;

- figures 8a and 8b represent diagrammatically a seventh embodiment of the present invention, respectively before and after activation;

- figures 9a and 9b represent diagrammatically an eighth embodiment of the present invention, before and after activation;

- figure 10 shows diagrammatically a ninth embodiment of the present invention, with the two positions before and after activation shown on the same figure;

- figure 11 shows diagrammatically a tenth embodiment of the present invention, with the two positions before and after activation shown on the same figure.

Figures 1, 2 and 4 represent rather more detailed views of three embodiments of the present invention, while figures 3a, 3b, 5, 6a, 6b, 7, 8a, 8b, 9a, 9b, 10 and 11 are very

diagrammatic views which show various different embodiments of the activation device, without showing the rest of the device in more detail.

With reference to the figures and notably to figure 1, the spray device according to the invention comprises a tank 10 which contains the fluid product to be dispensed, and a pump or valve 20, in this case a pump in figure 1, which is mounted on the tank 10 by means of a fixing ring 30, which in this example is a ring which snaps on to the neck of the tank. This pump 20 serves to dispense the product selectively through the dispensing opening 45 provided in a dispensing head 40. In this example, as in the examples represented in the other figures, the dispensing head 40 is a nasal dispensing head, in which the opening 45 is arranged axially in order to dispense the product inside the nostril.

Naturally, the present invention is not necessarily limited to nasal application, but applies to any type of fluid product dispensing device. Its use in a nasal dispensing device does however present all the advantages mentioned above.

According to the invention, the spray device comprises an activation system 50 which can be displaced in relation to the dispensing head 40, the direction of displacement of the activation device 50 being different from the direction of spray of the product through the dispensing opening 45. More specifically, the direction of displacement of the activation device 50 is approximately perpendicular to the direction of spray of the product through the dispensing opening 45, it being understood that depending on the embodiment chosen for the activation device, and in particular if it is a pivoting element, this direction is not always exactly perpendicular.

In the example shown in Figure 1 the activation system 50 comprises a lever 51 mounted to pivot on the body 100. According to the invention the activation system 50, in this case the lever 51, acts on the fixing ring 30 of the pump or valve 20 on the tank 10, in order to activate this pump or valve. The user therefore places the dispensing head 40 into his nostril and activates the lever 51 to dispense a dose of product, this activation

being achieved laterally in such a way that the device remains steady inside the nostril at the time of dispensing as no axial force is exerted on the device. This lever 51 is mounted to pivot preferably on the body 100 and comprises a part forming a cam 55 which co-operates with the fixing ring 30 or an element integral to it. Figures 1, 2, 7, 9a and 9b represent levers 51 mounted to pivot on an upper part of the body 100, close to the said fixing ring 30. Figures 6a, 6b, 8a, 8b and 10 show pivoting levers 51 mounted to pivot on a lower part of the body 100, close to the bottom of the tank 10. The cam means 55 of the lever 51 which co-operates with the fixing ring 30 or an element integral to it differ in the different variants represented on the figures.

Thus in the example represented in Figure 1 it is an inner end of the lever 51 which co-operates directly with the bottom part of the fixing ring 30.

In the example in Figures 6a and 6b, an angled rod 55 itself connected to pivot on the body 100 is fixed on the one hand to the lever 51 and on the other hand to the fixing ring 30 in such a way that activation of the lever 51 makes the rod 55 pivot to displace the tank and thus activate the pump.

In the example in Figure 7 it is an example it is an extension 55 of the lever 51 beyond its pivoting point which co-operates directly with the fixing ring 30.

The example in Figures 9a and 9b is similar to that represented in Figure 7, and the differences are mainly ergonomic and functional.

In the example in Figures 8a and 8b it is an oblique cam surface of the lever 51 which forms the part 55 co-operating with the activation ring 30, or more precisely with an element such as a tappet, cheek, shoulder or similar which is integral to the said ring 30.

In the example in Figure 10, an element 55 integral to the lever 51 and having a certain elasticity is displaced vertically upwards by activation of the lever 51 to activate the pump 20. This design provides a certain restoring force which automatically returns

the lever to its starting position. In the same way in the example presented on Figure 2, the lever 51 comprises a precompression element 52 which makes it possible to activate the pump or valve 20 only if the precompression threshold is overcome by the user. This makes it possible to keep distribution of the whole of the dose and avoid partial activation of the device.

In the examples in Figures 3a and 3b and 11, the activation device 50 is no longer in the form of a pivoting lever but in the form of buttons 56 which can be displaced laterally, the said displacement activating the pump or valve 20. More precisely in the example in Figure 11 a rod 57 is connected in a pivoting manner to the activation buttons 56, the said rod 57 being guided by an oblique surface such that activation of the buttons 56 causes a displacement of the said rod 57 vertically upwards to activate the pump, the end of the said rod being fixed to or co-operating with the fixing ring 30 of the device.

The examples presented on Figures 4 and 5 show variants very different from those represented in the previous diagrams. Thus in Figure 4 the activation system is arranged on the dispensing head 20 and not on the body of the device 100. It should be noted here that in the examples discussed above, represented on Figures 1, 2 and 8 to 11, the dispensing head is advantageously made integral to the body 100. In the example represented in Figure 4, the dispensing head is separate from the body of the device (not represented on Figure 4) and the activation device 50 is formed on the side skirt 41 of the dispensing head 40. Advantageously as represented in Figure 4, the said fixing ring 30 comprises an oblique cam element 31 which co-operates with the lower end 50 of the side skirt 41 of the dispensing head 40 in such a way that displacement of the said skirt 41 in a transverse direction in relation to the direction of spray of the product is transferred by the oblique cam element 31 into a displacement in the direction of spray of the product. In the device in Figure 4, the activation rod of the pump 20 is displaced by activation of the dispensing head 40. Thus it is advantageous that the cam element 31 of the fixing ring 30 co-operates with the lower end 50 of the side skirt 41 of the dispensing head 40 at the end of the activation stroke of the said dispensing head 40.



In the example represented in Figure 5, the fixing ring 30 comprises a fixing part to the tank 35, the tank not being represented on this figure, a fixing part to the pump 36, these two parts forming an angle of approximately  $90^\circ$  in such a way that the direction of displacement of the activation rod or valve 21 of the pump 20 is perpendicular to the axis of symmetry of the tank. On the other hand the dispensing head 40 also forms an angle of approximately  $90^\circ$  with the activation rod or valve 21 of the pump 20 in such a way that the direction of spray of the product is parallel to the axis of symmetry of the tank. Thus activation of the pump is achieved by displacement of the dispensing head 40 in the direction of displacement of the activation rod or valve 21 but perpendicular to the direction of spray of the product through the dispensing opening 45.

Naturally, all these examples have only been described and represented in a very diagrammatic manner, and other variants more or less equivalent could be used to implement the activation system according to the present invention. Therefore the invention is not restricted to the examples represented in the drawings.

## Claims

1. Fluid product dispensing device comprising a tank (10) containing fluid product, a pump or valve (20) mounted on the tank (10) by means of a fixing ring (30) to dispense the fluid product selectively, and a dispensing head (40) comprising a dispensing opening (45), the device comprising an activation device (50) which can be displaced in relation to the said dispensing head (40) between a resting position and a dispensing position, displacement of the activation device (50) being achieved in a direction different, and notably approximately perpendicular, to the direction of spray of the product through the dispensing opening (45), characterised in that the said activation device (50) is formed on the side skirt (41) of the dispensing head (40) and co-operates with the fixing ring (30) or an element integral to it in order to activate the pump or valve (20).
2. Device according to claim 1 where the fixing ring (30) or an element integral to it comprises an oblique cam element (31) co-operating with the lower end (50) of the side skirt (41) of the dispensing head (40), in such a way that displacement of the said skirt (41) in a transverse direction in relation to the direction of spray of the product is transferred by the said oblique cam element (31) into a displacement in the direction of spray of the product.
3. Device according to claim 2, in which the cam element (31) is provided at the end of the activation stroke of the dispensing head (40).
4. Device according to any of the previous claims, in which the activation device (30) comprises a precompression element, such that the pump or valve (20) is only activated when the precompression threshold is overcome by the user.
5. Device according to any of the previous claims, where the activation device (50) is in the form of one or several buttons (56) co-operating with the said fixing ring (30), the said buttons (56) being displaceable in a direction perpendicular to the

direction of displacement of the activation rod (51) of the pump (20) or valve (21).

6. Device according to any of the previous claims where the dispensing head (40) is a nasal dispensing head which, during activation of the pump or valve (20), remains in position in the user's nostril.

# SEARCH REPORT

Articles L.612-14, L.612-17 and R. 612-53 to 69 of the Intellectual Property Code

## **PURPOSE OF THE SEARCH REPORT**

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After the procedure laid down in the texts stated above has been carried out, the patent is granted. The National Industrial Property Institute (INPI) is not authorised to refuse the grant except in the case of **obvious** absence of novelty. The validity of a patent derives exclusively from the evaluation of the Courts.

However the INPI has to attach to each patent a “SEARCH REPORT” quoting the elements of the prior art which can be taken into consideration to evaluate the patentability of the invention. This report relates to the claims in the patent which define the purpose of the invention and delineate the scope of protection.

After issue, the INPI can, at the request of any interested person, formulate a “DOCUMENTARY OPINION” on the basis of the documents cited in this search report and any other document which the requestor wishes to have taken into account.

## **CONDITIONS FOR DRAFTING THE PRESENT SEARCH REPORT**

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- ☒ The applicant has submitted observations in response to the preliminary search report.
- ☒ The applicant has modified the claims.

## **DOCUMENTS CITED IN THIS SEARCH REPORT**

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The allocation of the documents between sections 1, 2 and 3 takes into account the claims last filed and/or the observations made.

- ☒ The documents listed in section 2 below illustrate the general technological background.

## **SECTION 2**

**DE196 10 456A (PFEIFFER ERICH GMBH & CO.KG) 18<sup>th</sup> September 1997 (1997-09-18)**

**PATENT ABSTRACTS OF JAPAN vol. 1998, no. 12, 31 October 1998 (1998-10-31) & JP 10 179739 A (TAISEI KAKO KK), 7 July 1998 (1998-07-07)**

**US 4 771 769 A (HEGEMANN MANFRED K ET AL) 20<sup>th</sup> September 1988 (1988-09-20).**

**US 3 272 391 A (MESHBERG) 13<sup>th</sup> September 1966 (1966-09-13)**

**US 5 487 489 A (SEIDLER DAVID ET AL) 30<sup>th</sup> January 1996 (1996-01-30)**

**US 3 321 111 A (JELLINEK) 23<sup>rd</sup> May 1967 (1967-05-23)**